



R18 Regulation

Subject code:2B2AE

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech II Semester Supplementary Examinations, July 2025

FUNDAMENTALS OF MECHANICAL ENGINEERING

(Common to CE & ME)

Maximum Marks: 70

Date:11.07.2025

Duration: 3 hours

- Note: 1.This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		Marks	CO	BTL
1	Define state , process, path and cycle.	2M	1	L1
2	Define Bio-fuel.	2M	1	L1
3	Determine the relation between Cp and Cv of gases?	2M	2	L1
4	How would you explain functioning of steam boiler.	2M	2	L1
5	Show that efficiency of Otto cycle is greater than that of diesel cycle for same compression ratio.	2M	3	L1
6	How would you say that diesel cycle is known as constant pressure cycle.	2M	3	L1
7	Why cooling of air compressor during compression is essential?	2M	4	L1
8	What is split air conditioner,why now-a-days people prefer it.	2M	4	L1
9	Which coupling can be used to couple two shafts whose axis intersect? Give name of different parts of the coupling.	2M	5	L1
10	Compare flat belt drive with "V" belt drive.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	What is prime mover? Explain different types of prime movers according to sources of energy.	10M	1	L2
OR				
12	Percentage composition of fuel on mass basis is C=87.1,H ₂ =4.4,O ₂ =1.2 and ash.Find minimum or theoretical mass and volume of air required to burn one kg of fuel.	10M	1	L2
13	Explain. I)Boyle's law II) Charle's law III) Combined gas law	10M	2	L2
OR				
14	Describe the process formation of steam from ice at 0°C and what is meant by internal energy of steam.	10M	2	L2
15	State the Carnot's principle. What is the importance of the principle, explain?	10M	3	L2

	OR			
16	Draw P-V & T-S diagram and processes.	10M	3	L2
17	What are various types of centrifugal pumps? Briefly explain any of two of them.	10M	4	L2
	OR			
18	Define specific speed of C.F. pump and Develop expression for the same.	10M	4	L2
19	What is clutch?How it differs from brake when multi plate clutches are used?	10M	5	L2
	OR			
20	Describe the various classifications of engineering materials with their preparation and applications.	10M	5	L2